

2023-05-16 Hamlet Net - Wilderness Protocol

Announcements:

- Test Session Info
 - Next VE session is Saturday, **May 27** in the Clover Building at the Boulder County Fairgrounds, and starts at 9am. It is a Patriot VE team session, so no additional charge to take the test, but you must pre-register for the session. For more info, see the Licensing/Testing page on the club web site, w0eno.org, under the Education menu.
- The LARC May General meeting will be tomorrow, May 17th, both via Zoom and in person at the Clover Building at the Boulder County Fairgrounds. Our guest speaker is Carl Luetzelschwab (K9LA) who will present on "What Makes Propagation Work." The Zoom and in person gatherings will start at 6:30pm for socializing, with the meeting starting at 7.
- Saturday, May 20th, 1-5pm - ARES will be running a simulated emergency test. They will be using LARC repeaters, so if you're going to be around, you can turn on your radio and see how they communicate.
- Chuck is putting together a special event to celebrate the 100 year anniversary of Peak-to-Peak involving multiple area radio clubs. Contact him if you'd like to help plan and participate!
- Once you have your Yagi antenna, LARC is running Fox Hunt where participants hunt for a hidden transmitter. The hunt will be Saturday, May 27th at 9AM until 12PM. The Fox will be located somewhere in Golden Ponds Park at and will be transmitting on 146.565 MHz. For more info, check out the club web site at w0eno.org (<https://w0eno.org/another-larc-fox-hunt/>)
- May 27th - Doug Sharp (K2AD) has invited the club to his house in Firestone to participate in the W1AW/0 event. This is part of the ARRL VOTA (volunteers on the air) event that is going on all year. Doug will have one of the RMHAM vans and other setups for hams to participate. Please contact Doug at doug@dougsharp.com for more info and to RSVP.
- The ARRL is running a survey regarding increasing their dues. If you are an ARRL member, you can provide your input at: <https://www.arrl.org/take-dues-survey>
- Field Day is coming up in June, and the club is starting to work on planning for this event. See the Club website for more information.
- You can start earning your 2023 membership or future renewal by acting as NCS for at least 5 nets this year. You can run either this Tuesday night net or the Thursday night net (or both). We have scripts available for both, so all you need is a good connection

into the repeater, and somewhere to keep track of names and call signs as people check in. If you're going to be on the net anyway, why not save some dough at the same time! There are four free memberships available for 2023, so don't wait to get started!

- Chuck has set a goal for the Club of running at least one activity a month. This can be a hands-on construction activity, an operating activity like Field Day, a fox hunt, or a special event station. The goal is to get people together to have fun with amateur radio! We have multiple locations at our disposal, as well as lots of Club equipment, so if you have an idea for something you think others hams would like to do, please let us know, and if you're willing to run it, even better!
- The Club is also looking for presentation topics for 2023. If you have any ideas, or better yet, would like to present, please let Chuck know and we'll get you on the schedule!
- All club activities are open to anyone - members and non-members. ~~If you have questions, ask them on a net or~~ send email to elmer@w0eno.org

Presenter: Bryan, AF0W

Topic: The Wilderness Protocol

- One service provided by the Longmont Amateur Radio Club is an email address to which you can send questions that is staffed by experienced hams in the club. They can help you out with issues such as questions on how to use your gear, what equipment to purchase, and help troubleshoot any issues you may be having.
 - a. Just send an email to "elmer@w0eno.org" - doesn't matter if your a club member or not - we're here to help
- The topic for this week's presentation was the subject of one such question - something called the Wilderness Protocol
- I had heard of this before, but did some additional research into the history of this procedure

Wilderness Protocol

- Many of us got into this hobby either to have a means for communicating in an emergency, or for helping others during such an event
- Say you're on a hike in the mountains, and someone in your party falls and injures themselves seriously enough to need outside help
- You are in an area without cell phone service, but have you have your HT with you - what do you do?

- If you happen to be within range of any repeaters, you can attempt to make contact there, but what if there aren't any that you can reach or you neglected to program them into your radio?
- Well, there is always simplex, but how do you know where anyone will be listening?
 - a. The CCARC's 2 meter band plan specifies over 180 channels - where will you have the best chance of someone listening?
- A solution to this problem was proposed by William Alsup, N6XMW, in the February 1994 ARRL QST in his article titled "A Wilderness VHF FM Protocol"
- In it, he states that "The Wilderness Protocol is simply a recommendation that those outside of repeater range monitor standard simplex channels at specific times in case others have priority or emergency calls."
- The protocol utilizes the calling frequencies of multiple amateur bands
- The primary frequency is the 2m calling frequency at 146.52 MHz
 - a. Secondary frequencies are 446.0 MHz in the 70cm band, 223.5 in the 1.25 cm band, 52.525 for 6 meters, and 1294.5 MHz in the 23 cm band.
- Back in the CB days, many police and other organizations monitored channel 9 as a traveler emergency channel, but there are no such groups monitoring the amateur calling frequencies
- The hope is that if enough amateurs add these frequencies to their memory channels when scanning, there will be a higher chance of reaching someone on these frequencies as opposed to any others
- If you are out and about enjoying the outdoors yourself, you should monitor these frequencies during the protocol times if you can - you might become the link between an injured hiker and emergency services

Implementation

- There is more to the Wilderness Protocol than just the frequencies - how do you use them for maximum effectiveness?
- One concern for a lost hiker is that battery capacity is limited, and that transmitting uses a lot more battery power than receiving
- The Protocol specifies that communication attempts should be made every 3 hours starting at 7am local time, and continuing for 5 minutes.

- a. After the 10pm attempt, stations should wait until the next morning to make further communication attempts
- This means that stations should listen (or scan over) these calling frequencies at these same times
 - a. The Protocol also mentions listening every hour, if you have the power available
- Priority calls can use something called LiTZ, which I'll get into later
- It also specifies that amateurs looking to make a QSO or having other routine traffic should wait until at least 4 minutes after the hour to transmit to give the high priority stations a chance to get assistance

LiTZ

- So what is LiTZ?
 - a. It stands for "Long Tone Zero" and is a signal sent by transmitting the DTMF tone for the digit 0 for three to ten seconds
 - b. This is accomplished on most radios by holding down the 0 key on the numeric keypad while at the same time holding down the push-to-talk button to transmit
- This signal means that the sending station has an immediate need to communicate with someone regarding a priority or emergency situation
 - a. It should not be used for routine traffic
 - b. You should first attempt to make voice contact, but if no one responds (or responders are unable to help), you can try the LiTZ signal
- To facilitate responding to such calls, there were various articles in QST regarding construction of alerting or squelch systems that would monitor received signals for the LiTZ signal and either disable squelch so the voice message following the signal could be received, or sounding a bell or other alert
- This system was developed by the Hualapai Amateur Radio Club for a repeater in Kingman, Arizona and is the subject of a November 1991 QST article
- The ARRL Board of Directors later adopted LiTZ as the national alerting system for repeaters, and to indicate LiTZ support in the ARRL's repeater book listings
 - a. I don't have my copy with me, so I'm not sure if this capability is still indicated in the book or app

- The need for such a system arose as the local repeater became extremely busy with both local and "drive by" traffic from travelers
- Many local hams would leave their radios turned off unless they wanted to make a contact, so there was not always someone available to respond to emergencies
- Many repeaters will simply pass the audio signal through, so anyone listening to the repeater will hear it
- That group also implemented 3 and 4 digit "personal codes" so that club members could set up devices to alert them when their "personal code" was received
- There was some discussion in QST regarding a potential issue using DTMF tones for amateur radio signaling
 - a. DTMF stands for "Dual-Tone Multi Frequency" and is a system where two tones are generated for each keypress - one representing the column and the other the row containing the pressed key
 - b. Due to the way audio is handled, a situation may occur where one of these tones is louder than the other, which can confuse some decoders
 - c. There didn't appear to be any articles discussing LiTZ after 1996, so I don't know if it turned out to be a big issue or not
- Even if you do not have a decoder or other notification device, hearing a long DTMF tone on a repeater will stand out from the usual traffic and alert listeners to listen for an emergency message to follow

Colorado Emergency Reporting Network

- Here in Colorado, we have another option - the Colorado Emergency Reporting Network, or CERN
- They are a group of volunteer amateur radio operators whose goal is monitoring the Colorado Connection's statewide repeater system 24 hours a day, 7 days a week in order to report any type of an emergency that is called into the net
- The organization was conceived and organized by Sydney Cleveland, KE0GNS (SK, 2018)
- Some situations do not require professional assistance - they're just as happy to provide a radio check in a non-emergency

- They do this via policies and procedures they have developed, standardized report forms, a weekly schedule and resources to help monitors locate the county the caller is in, as well as a phone list for the Colorado 911 Public Safety Access Points
- The CERN volunteer answers the radio call and writes down the caller's location and all important information.
- If necessary, the monitor will then relay the information to the 9-1-1 operator in the County where the caller is located. The 9-1-1 operator then activates the appropriate emergency responders such as police, fire, medical, or Search and Rescue.
- They also run a daily net at 6:30 PM and is a great introduction for new Hams wanting to get on the air and practice. After checking in, Net Control will repeat your information, give you a readability report and ask if they copied your information correctly.
- I don't see any mention of the Wilderness Protocol in their "Policies and Procedures Training Document," but they do have a "CERN Wilderness Protocol" document
 - a. In it, they encourage their monitors to monitor the frequencies from 5 minutes before to 5 minutes after the hour, to account for any differences in how people have their watches set
 - b. They do state that this is not a requirement for CERN monitoring, but they see it as a way to expand on the services they provide to the amateur community
- The Colorado Connection is a system of linked 2-meter repeaters that is built and maintained by volunteers and is open to all licensed amateur radio operators.
- The system covers about 60% of the area of Colorado and a large part of the I-25 and I-70 Interstate highways
- Their repeater covering the Denver/Boulder area is on 145.310 MHz with a negative offset and 88.5 Hz CTCSS tone - they have a receiver for this repeater on Lee Hill
- Both CERN and the Colorado Connection rely on contributions from clubs and individuals to operate.
- If you'd like to participate as a volunteer with CERN, check out their web site at: <https://co-cern.org/>
- Their online schedule shows that they do need volunteer monitors for a number of time periods throughout the week, so if you'd like to help, give it a try!
 - a. They have multiple training and reporting documents available on their web site
- When using the Colorado Connection repeaters, wait two seconds after pressing your push-to-talk to give all the repeaters time to link up. Also, wait until you hear the

courtesy tone before responding to someone else's transmission so that everything has time to unlink properly (and also so that others may break in, if needed).

Summary

- There is no guarantee that someone is listening, but learning about the Wilderness Protocol should give you better chances if you are ever in a situation where you need to rely on your radio for help
- Even if you're not in need of assistance yourself, turning on your radio at these times and monitoring the calling frequencies gives you an opportunity to help out another ham in need
- It would be a good idea to program in any Colorado Connection repeaters around the areas you frequent (or just program them all in) as well as the simplex calling frequencies for any bands your radios support
- If you have an Apple device, the compass app will show your latitude and longitude (which could be helpful for getting rescuers to your location). For Android, you should download an appropriate app before you go out of cell or WiFi range.
- While we all want to think that amateur radio will save the day, if you know you are going to be out in an area with no cell coverage and little or no repeater coverage, you should look into some sort of personal locator device as your "last line of defense" should an emergency occur
- If you are an ARRL member, I'm including a list of references to past QST articles on the Wilderness Protocol and LiTZ in the net notes for tonight.

Questions:

- **The question for the week is:** Have you ever heard of the Wilderness Protocol or Long Tone Zero systems? What preparations have you made, if any, for getting support in an emergency outside of cell coverage areas?
- **In my case,** I had heard of both of these systems before, but did not remember the specifics of the Wilderness Protocol off the top of my head. I do have the 2m and 70cm calling frequencies programmed into my HTs, but I've only used them occasionally to monitor for traffic while on vacation (I think I only heard someone on them once). Of course, I did not call CQ, so perhaps there were people listening.

At this time, I don't really have any big emergency preparations regarding radios. I do have an Ed Fong roll up J pole antenna and coax feedline to give my HT a boost, spare battery packs, and where I could obtain them, battery packs that are run off of standard AA batteries.

I am lacking in having very many repeaters programmed into my radio, as I primarily "hang out" on the LARC repeaters. As the repeater trustee, I frequently have a radio in the house monitoring one of the LARC repeaters, but I don't necessarily respond to any "monitoring" requests unless I'm not otherwise engaged.

More Info:

- The Wilderness Protocol: <https://tcares.net/the-wilderness-protocol/>
 - Colorado Emergency Reporting Network (CERN): <https://co-cern.org/>
 - Colorado Connection (ColCon): <https://colcon.org/>
 - A Wilderness VHF FM Protocol, ARRL QST, Feb 1994, pg. 99
 - Wilderness VHF Protocol Reminder, ARRL QST, Aug 1995, pg. 101
 - Mutual Assistance Protocols for VHF and UHF, ARRL QST, Jun 1996, pg. 85
 - Wilderness Emergency Communications Protocols, ARRL QST, Mar 2021, pg. 70 - 71
 - LiTZ Alert: One Solution that Works, ARRL QST, Nov 1991, pg. 91
 - ZERO: An Alerting Device for Repeater Users, ARRL QST, Nov 1992, pg. 108 - 110
 - Long Tone Zero for the ACC RC-85 Repeater Controller, ARRL QST, Dec 1992, pg. 82
 - LiTZ Debate: Will ZERO WOrk on Your Repeater?, ARRL QST, Mar 1993, pg. 98 - 99
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- If you have ideas for net topics or general meeting topics / presenters, please let us know! Tell us on a net, or send email to k0itp@w0eno.org

Email to elmer@w0eno.org

1. KN6CFI - John - Longmont
2. KM6SJA - Steve - Longmont
3. AE0DO - John - N of Longmont
4. KF0LHV - Jonathan - Longmont
5. AF0W - Bryan - Echolink (El Paso)
6. WA0JJC - Bob - Boulder

Have someone try transmitting DTMF 0 for 5 seconds and see what happens (repeater logs, can anyone hear it, etc.) - heard DTMF for fraction of a second only (apparently, repeater is muting it)

Perhaps print out and laminate a business-card sized piece of paper with the Wilderness Protocol on it.